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# Home freezing of fruits and vegetables



Home and Garden Bulletin No. 10

U. S. Department of Agriculture

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*Prepared by*

**HUMAN NUTRITION RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE**

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# **Home freezing of fruits and vegetables**

There is no "out of season" for products of your garden and orchard—if you have a home freezer or space in a neighborhood locker plant.

Freezing is one of the simplest and least time-consuming ways to preserve foods at home. It keeps well the natural color, fresh flavor, and nutritive values of most fruits and vegetables. Frozen fruits and vegetables are ready to serve on short notice because most of the preparation they need for the table is done before freezing.

Directions are given in this bulletin for freezing many fruits and vegetables that give satisfactory products when frozen at home or in the locker plant. It is important that the directions be followed carefully, because the quality of product can vary with freshness of produce used, method of preparation and packaging, and conditions of freezing.

## **General freezing procedures**

### **What to freeze**

Freezing is not necessarily recommended as the preferred way for preserving all products listed in this bulletin. What to freeze must be decided on the basis of family needs and desires, on freezer space and cost of freezer storage, and on other storage facilities available.

It may be more economical, for instance, to store some fruits and vegetables in a vegetable cellar than to freeze them. But to you freezing may be worth the extra cost because of the convenience of having the products prepared so they can be readied quickly for serving.

Costs of owning and operating a home freezer vary with the rate of turnover of foods, electricity used, costs of packaging materials, repairs, and the original price of the freezer.

Some varieties of all fruits and vegetables freeze better than others. Because growing conditions differ widely throughout the country and different varieties of fruits and vegetables are available in different localities, it is not practical to specify in this publication the varieties suitable for freezing. Write to your State extension service, experiment

station, or college of agriculture for information on local varieties that give highest quality when frozen.

If you have doubts as to how well a fruit or vegetable will freeze, it would be well to test it before freezing large quantities. To test, freeze three or four packages and sample the food after freezing. This shows the effect of freezing only, not the effect of storage.

Some fruits and vegetables do not make satisfactory products when frozen. They include green onions, lettuce and other salad greens, radishes, tomatoes (except as juice or cooked). Research may provide directions later for preparing good frozen products from some of these foods.

## **Containers for freezing**

The prime purpose of packaging is to keep food from drying out and to preserve food value, flavor, color, and pleasing texture.

All containers should be easy to seal and waterproof so they will not leak. Packaging materials must be durable and must not become so brittle at low temperatures that they crack.

To retain highest quality in frozen food, packaging materials should be moisture-vapor-proof, to prevent evaporation. Many of the packaging materials on the market for frozen food are not moisture-vapor-proof, but are sufficiently moisture-vapor-resistant to retain satisfactory quality of fruits and vegetables during storage. Glass, metal, and rigid plastic are examples of moisture-vapor-proof packaging materials. Most bags, wrapping materials, and waxed cartons made especially for freezing are moisture-vapor-resistant. Not sufficiently moisture-vapor-resistant to be suitable for packaging foods to be frozen are ordinary waxed papers, household aluminum foil, and cartons for cottage cheese, ice cream, and milk.

**Rigid containers.** Rigid containers made of aluminum, glass, plastic, tin, or heavily waxed cardboard are suitable for all packs, and especially good for liquid packs. Glass canning jars may be used for freezing most fruits and vegetables except those packed in water. Plain tin or R-enamel cans may be used for all foods, but some foods may be better packed in cans with special enamel linings: C-enamel for foods containing considerable sulfur—corn, lima beans, carrots; R-enamel for highly colored foods—beets, berries, red cherries, fruit juices, plums, pumpkin, rhubarb, squash, sweetpotatoes.

**Nonrigid containers.** Bags and sheets of moisture-vapor-resistant cellophane, heavy aluminum foil, pliosfilm, polyethylene, or laminated papers and duplex bags consisting of various combinations of paper,

metal foil, glassine, cellophane, and rubber latex are suitable for dry-packed vegetables and fruits. Bags also can be used for liquid packs.

Bags and sheets are used with or without outer cardboard cartons to protect against tearing. Bags without a protective carton are difficult to stack. The sheets may be used for wrapping such foods as corn-on-the-cob or asparagus. Some of the sheets may be heat-sealed to make a bag of the size you need. Sheets that are heat-sealing on both sides may be used as outer wraps for folding paperboard cartons.

**Size.** Select a size that will hold only enough of a fruit or vegetable for one meal for your family.

**Shape.** Rigid containers that are flat on both top and bottom stack well in a freezer. Round containers and those with flared sides or raised bottoms waste freezer space. Nonrigid containers that bulge waste freezer space.

Food can be removed easily before it is thawed from containers with sides that are straight from bottom to top, or that flare out. Food must be partially thawed before it can be removed from containers with openings narrower than the body of the container.

Bags, sheets, and folding paperboard cartons take up little room when not in use. Rigid containers with flared sides will stack one inside the other and save space in your cupboard when not in use. Those with straight sides or narrow top openings cannot be nested.

**Sealing.** Care in sealing is as important as using the right container. Rigid containers usually are sealed either by pressing on or screwing on the lid. Tin cans such as are used in home canning require a sealing machine or special lids. Some rigid cardboard cartons need to have freezer tape or special wax applied after sealing to make them airtight and leakproof. Glass jars must be sealed with a lid containing composition rubber or with a lid and a rubber ring.

Most bags used for packaging can be heat-sealed or sealed by twisting and folding back the top of the bag and securing with a string, a good quality rubber or plastic band, or other sealing device available on the market. Some duplex bags are sealed by folding over a metal strip attached to the top of the bag.

Special equipment for heat-sealing bags or sheets for freezing is available on the market, or a household iron may be used. To heat-seal polyethylene or pliofilm bags or sheets used as overwraps, first place a piece of paper or heat-resistant material made especially for the purpose over the edges to be sealed. Then press with a warm iron. Regulate heat of the iron carefully—too much heat melts or crinkles the materials and prevents sealing.

As manufacturers are constantly making improvements and developing new containers it is a good idea to note when you buy how containers are to be sealed.

**Reuse.** Tin cans with slip-top closures, glass and rigid plastic and aluminum containers can be reused indefinitely. It is difficult to reuse aluminum foil boxes, because edges of lids and containers are folded over in sealing. Tin cans that require a sealer must be reflanged with a special attachment to a sealer before they are reused. A tin can or lid that is dented should not be used if it cannot be sealed.

Reuse of rigid cardboard cartons, unless plastic-lined, is not generally advisable because cleaning is difficult. Folding paperboard cartons used to protect an inner bag can be reused.

**Cost.** When you compare prices of the containers that are available in your locality, consider whether they will be reusable or not. If containers are reusable, a higher initial cost may be a saving in the long run.

**Care of packaging materials.** Protect packaging materials from dust and insects. Keep bags and rolls of wrapping materials that may become brittle, such as cellophane, in a place that is cool and not too dry.

**Freezing accessories.** Check on other items that help make packing easier. Some containers are easier to fill if you use a stand and funnel. Special sealing irons available on the market or a regular household iron may be used for heat-sealing bags, wrappers, and some types of paper cartons. With some sealing irons, a small wooden block or box makes sealing of bags easier and quicker.

## Packing

- Pack food and sirup cold into containers. Having materials cold speeds up freezing and helps retain natural color, flavor, and texture of food.
- Pack foods tightly to cut down on the amount of air in the package.
- When food is packed in bags, press air out of unfilled part of bag. Press firmly to prevent air from getting back in. Seal immediately, allowing the head space recommended for the product.
- Allow ample head space. With only a few exceptions, allowance for head space is needed between packed food and closure because food expands as it freezes. A guide to the amount of head space to allow is given in the table on the following page.

## **Head space to allow between packed food and closure**

<b>TYPE OF PACK</b>	<b>Container with wide top opening<sup>1</sup></b>		<b>Container with narrow top opening<sup>2</sup></b>	
	<b>Pint</b>	<b>Quart</b>	<b>Pint</b>	<b>Quart</b>
Liquid pack . . . . . (Fruit packed in juice, sugar, sirup, or water; crushed or puree; juice.)	½ inch	1 inch	¾ inch <sup>3</sup>	1½ inches
Dry pack <sup>4</sup> . . . . . (Fruit or vegetable packed without added sugar or liquid.)	½ inch	½ inch	½ inch	½ inch

<sup>1</sup> This is head space for tall containers—either straight or slightly flared.

<sup>2</sup> Glass canning jars may be used for freezing most fruits and vegetables except those packed in water.

<sup>3</sup> Head space for juice should be 1½ inches.

<sup>4</sup> Vegetables that pack loosely, such as broccoli and asparagus, require no head space.

- Keep sealing edges free from moisture or food so that a good closure can be made. Seal carefully.
- Label packages plainly. Include name of food, date it was packed, and type of pack if food is packed in more than one form. Gummed labels, colored tape, crayons, pens, and stamps are made especially for labeling frozen food packages.

## **Loading the freezer**

Freeze fruits and vegetables soon after they are packed. Put them in the freezer a few packages at a time as you have them ready, or keep packages in the refrigerator until all you are doing at one time are ready. Then transfer them to the home freezer or carry them in an insulated box or bag to the locker plant. Freeze at 0° F. or below.

Put no more unfrozen food into a home freezer than will freeze within 24 hours. Usually this will be about 2 or 3 pounds of food to each cubic foot of its capacity. Overloading slows down the rate of freezing, and foods that freeze too slowly may lose quality or spoil. For quickest freezing,

place packages against freezing plates or coils and leave a little space between packages so air can circulate freely.

After freezing, packages may be stored close together. Store them at 0° F. or below. At higher temperatures foods lose quality much faster. Most fruits and vegetables maintain high quality for 8 to 12 months at 0° or below; citrus fruits and citrus juices, for 4 to 6 months. Unsweetened fruits lose quality faster than those packed in sugar or sirup. Longer storage will not make foods unfit for use, but may impair quality.

It's a good idea to post a list of frozen foods near the freezer and keep it up to date by listing the foods and date of freezing as you put them in and checking them off as you take them out. This helps to keep packages from being forgotten.

### **In case of emergency**

If power is interrupted or the freezer fails to refrigerate properly, do not open the cabinet unnecessarily. Food in a loaded cabinet usually will stay frozen for 2 days, even in summer. In a cabinet with less than half a load, food may not stay frozen more than a day.

**Dry ice to prevent thawing.** If the power is not to be resumed within 1 or 2 days, or if the freezer may not be back to normal operation in that time, use dry ice to keep the temperature below freezing and to prevent deterioration or spoilage of frozen food.

Twenty-five pounds of dry ice in a 10-cubic-foot cabinet should hold the temperature below freezing for 2 to 3 days in a cabinet with less than half a load and 3 to 4 days in a loaded cabinet, if dry ice is obtained quickly following interruption of power. Move any food stored in a freezing compartment of a freezer to the storage compartment. Place dry ice on boards or heavy cardboard on top of the packages and do not open freezer oftener than necessary. Don't handle dry ice with bare hands; it can cause burns. When using dry ice, room should be ventilated. If you can't get dry ice, try to locate a locker plant and move the food there in insulated boxes.

## Points on freezing fruits

Most fruits can be frozen satisfactorily, but the quality of the frozen product will vary with the kind of fruit, stage of maturity, and type of pack. Pointers on selecting fruit properly are given in the directions and must be followed carefully to be sure of a good frozen product.

Generally, flavor is well retained by freezing preservation. Texture may be somewhat softer than that of fresh fruit. Some fruits require special treatment when packed to make them more pleasing in color, texture, or flavor after thawing. Most fruits are best frozen soon after harvesting. Some, such as peaches and pears, may need to be held a short time to ripen.

### Before packing

All fruits need to be washed in cold water. Wash a small quantity at a time to save undue handling, which may bruise delicate fruits such as berries. A perforated or wire basket is useful. Lift washed fruits out of the water and drain thoroughly. Don't let the fruit stand in the water—some lose food value and flavor that way and some get water-soaked.

In general, fruit is prepared for freezing in about the same way as for serving. Large fruits generally make a better product if cut in pieces or crushed before freezing. Many fruits can be frozen successfully in several forms. Good parts of less perfect fruit are suitable for crushed or pureed packs.

Peel, trim, pit, and slice fruit following the directions on pages 18 to 28. It is best to prepare enough fruit for only a few containers at one time, especially those fruits that darken rapidly. Two or three quarts is a good quantity to work with.

If directions call for fruit to be crushed, suit the method of crushing to the fruit. For soft fruits, a wire potato masher, pastry fork, or slotted spoon may be used; if fruits are firm they may be crushed more easily with a food chopper. For making purees a colander, food press, or strainer is useful.

Use equipment of aluminum, earthenware, enameled ware, glass, nickel, stainless steel, or good-quality tinware. Do not use galvanized ware in direct contact with fruit or fruit juices because the acid in fruit dissolves zinc, which is poisonous.

Metallic off-flavors may result from the use of iron utensils, chipped enameled ware, or tinware that is not well tinned.

## Ways to pack

Most fruits have better texture and flavor if packed in sugar or sirup. Some may be packed without sweetening.

In the directions for freezing, three ways of packing are given for fruits whole or in pieces—sirup pack, sugar pack, and unsweetened pack. Directions are also given for packing crushed fruits, purees, and fruit juices.

Your selection of the way to pack the fruit will depend on the intended use. Fruits packed in a sirup are generally best for dessert use; those packed in dry sugar or unsweetened are best for most cooking purposes because there is less liquid in the product.

Even though unsweetened packs generally yield a lower quality product than packs with sugar, directions in this publication include unsweetened packs whenever they are satisfactory, because they are often needed for special diets. Some fruits, such as gooseberries, currants, cranberries, rhubarb, and figs, give as good quality packs without as with sugar.

**Sirup pack.** A 40-percent sirup is recommended for most fruits. For some mild-flavored fruits lighter sirups are desirable to prevent masking of flavor. Heavier sirups may be needed for very sour fruits.

In the directions for each fruit, sirups are called for according to the percentage of sugar in the sirup. Below is a master recipe from which any of the sirups can be made. It takes one-half to two-thirds cup of sirup for each pint package of fruit.

### Sirups for use in freezing fruits

Type of sirup	Sugar <sup>1</sup>		Yield of sirup
	Cups	Cups	
30-percent sirup.....	2	4	5
35-percent sirup.....	2½	4	5½
40-percent sirup.....	3	4	5½
50-percent sirup.....	4¾	4	6½
60-percent sirup.....	7	4	7¾
65-percent sirup.....	8¾	4	8⅔

<sup>1</sup> In general, up to one-fourth of the sugar may be replaced by corn sirup. A larger proportion of corn sirup may be used if a very bland, light-colored type is selected.

Dissolve sugar in cold or hot water. If hot water is used, cool sirup before using. Sirup may be made up the day before and kept cold in the refrigerator.

When packing fruit into containers be sure the sirup covers the fruit, so that the top pieces will not change in color and flavor. To keep the

fruit under the sirup, place a small piece of crumpled parchment paper or other water-resistant wrapping material on top and press fruit down into sirup before closing and sealing the container.

**Sugar pack.** Cut fruit into a bowl or shallow pan. Sprinkle the sugar (quantity needed given in the directions for each fruit) over the fruit. To mix, use a large spoon or pancake turner. Mix gently until juice is drawn out and sugar is dissolved.

Put fruit and juice into containers. Place a small piece of crumpled parchment paper or other water-resistant wrapping material on top to hold fruit down in juice. Close and seal the container.

**Unsweetened pack.** Pack prepared fruit into containers, without added liquid or sweetening, or cover with water containing ascorbic acid. Or pack crushed or sliced fruit in its own juice without sweetening. Press fruit down into juice or water with a small piece of crumpled parchment paper as for sirup and sugar pack. Close and seal containers.

## To keep fruit from darkening

Some fruits darken during freezing if not treated to retard darkening. Directions for such fruits list antidarkening treatment as part of the freezing preparation. Several types of antidarkening treatments are used because all fruits are not protected equally well by all treatments.

**Ascorbic acid.** For most of the fruits that need antidarkening treatment, ascorbic acid (vitamin C) may be used. This is very effective in preserving color and flavor of fruit and adds nutritive value.

Ascorbic acid in crystalline form is available at drug stores and at some locker plants, in various sized containers from 25 to 1,000 grams. (Crystalline ascorbic acid may be obtained also in powdered form.) One teaspoon weighs about 3 grams; thus there are approximately 8 teaspoons of ascorbic acid in a 25-gram container. In the recipes, amounts of crystalline ascorbic acid are given in teaspoons.

Ascorbic acid tablets can be used but are more expensive and more difficult to dissolve than the crystalline form. Also filler in the tablets may make the sirup cloudy. The amount of ascorbic acid in tablets is usually expressed in milligrams. Below are amounts needed in milligrams if tablets are used in place of crystalline ascorbic acid:

Crystalline	Tablets
1/8 teaspoon.....	375 milligrams
1/4 teaspoon.....	750 milligrams
1/2 teaspoon.....	1,500 milligrams
3/4 teaspoon.....	2,250 milligrams
1 teaspoon.....	3,000 milligrams

To use, dissolve ascorbic acid in a little cold water. If using tablets, crush them so they will dissolve more easily.

● *In sirup pack.* Add the dissolved ascorbic acid to the cold sirup shortly before using. Stir it in gently so you won't stir in air. Solutions of ascorbic acid should be made up as needed. Keep sirup in refrigerator until used.

● *In sugar pack.* Sprinkle the dissolved ascorbic acid over the fruit just before adding sugar.

● *In unsweetened pack.* Sprinkle the dissolved ascorbic acid over the fruit and mix thoroughly just before packing. If fruit is packed in water, dissolve the ascorbic acid in the water.

● *In fruit juices.* Add ascorbic acid directly to the juice. Stir only enough to dissolve ascorbic acid.

● *In crushed fruits and fruit purees.* Add dissolved ascorbic acid to the fruit preparation and mix.

**Ascorbic acid mixtures.** There are on the market special anti-darkening preparations—usually made of ascorbic acid mixed with sugar or with sugar and citric acid. If you use one of these, follow the manufacturer's directions. In these mixtures ascorbic acid is usually the important active ingredient. Because of its dilution with other materials, ascorbic acid purchased in these forms may be more expensive than the pure ascorbic acid.

**Citric acid, lemon juice.** For a few fruits citric acid or lemon juice (which contains both citric acid and ascorbic acid) makes a suitable antideraining agent. However, neither is as effective as ascorbic acid. Citric acid or lemon juice in the large quantities needed in some cases would mask the natural fruit flavors or make the fruits too sour.

Citric acid in crystalline or powdered form is available at drugstores and some locker plants. When using citric acid, dissolve it in a little cold water before adding to the fruit according to directions for that fruit.

**Steam.** For some fruits steaming for a few minutes before packing is enough to control darkening.

## Table of fruit yields

The following table will help you figure how much frozen fruit you can get from a given quantity of fresh fruit and will help in making cost comparisons.

The number of pints of frozen food you can get depends upon the quality, variety, maturity, and size of the fruit—and whether it is frozen whole or in halves, in slices, in cubes, or in balls.

## Approximate yield of frozen fruits from fresh

FRUIT	FRESH, AS PURCHASED OR PICKED	FROZEN
Apples	1 bu. (48 lb.) 1 box (44 lb.) 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ lb.	32 to 40 pt. 29 to 35 pt. 1 pt.
Apricots	1 bu. (48 lb.) 1 crate (22 lb.) $\frac{2}{3}$ to $\frac{4}{5}$ lb.	60 to 72 pt. 28 to 33 pt. 1 pt.
Berries <sup>1</sup>	1 crate (24 qt.) 1 $\frac{1}{3}$ to 1 $\frac{1}{2}$ pt.	32 to 36 pt. 1 pt.
Cantaloups	1 dozen (28 lb.) 1 to 1 $\frac{1}{4}$ lb.	22 pt. 1 pt.
Cherries, sweet or sour	1 bu. (56 lb.) 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ lb.	36 to 44 pt. 1 pt.
Cranberries	1 box (25 lb.) 1 peck (8 lb.) $\frac{1}{2}$ lb.	50 pt. 16 pt. 1 pt.
Currents	2 qt. (3 lb.) $\frac{3}{4}$ lb.	4 pt. 1 pt.
Peaches	1 bu. (48 lb.) 1 lug box (20 lb.) 1 to 1 $\frac{1}{2}$ lb.	32 to 48 pt. 13 to 20 pt. 1 pt.
Pears	1 bu. (50 lb.) 1 western box (46 lb.) 1 to 1 $\frac{1}{4}$ lb.	40 to 50 pt. 37 to 46 pt. 1 pt.
Pineapple	5 lb.	4 pt.
Plums and prunes	1 bu. (56 lb.) 1 crate (20 lb.) 1 to 1 $\frac{1}{2}$ lb.	38 to 56 pt. 13 to 20 pt. 1 pt.
Raspberries	1 crate (24 pt.) 1 pt.	24 pt. 1 pt.
Rhubarb	15 lb. $\frac{2}{3}$ to 1 lb.	15 to 22 pt. 1 pt.
Strawberries	1 crate (24 qt.) $\frac{2}{3}$ qt.	38 pt. 1 pt.

<sup>1</sup> Includes blackberries, blueberries, boysenberries, dewberries, elderberries, gooseberries, huckleberries, loganberries, and youngberries.

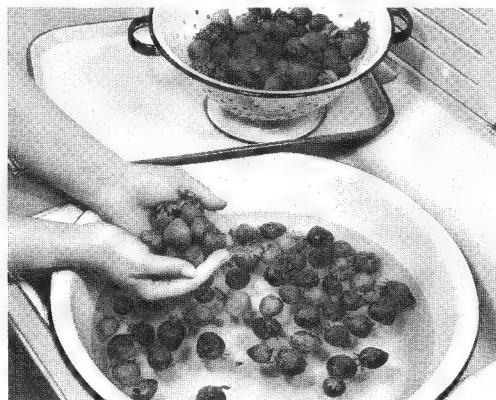
## Strawberries . . . packed in sugar

Pride of the freezer are strawberries—sliced, sweetened with dry sugar, and frozen. For other fruits packed in sugar, follow the general steps shown here. A pint plastic box is the container illustrated, but other types of containers (p. 4) may also be used.



- Select firm, ripe strawberries—about  $\frac{2}{3}$  quart fresh berries are needed for each pint frozen.

9116D



- Wash berries a few at a time in cold water. Lift berries gently out of water and drain.

9117D



- Remove hulls; then slice berries into a bowl or shallow pan.

9119D

● Sprinkle sugar over berries—  
3/4 cup to each quart (1 1/3  
pounds) berries. Turn berries  
over and over until sugar is  
dissolved and juice is formed.

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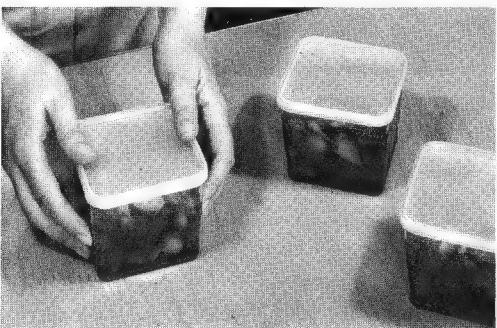
● Pack berries in container,  
leaving 1/2-inch head space in  
the wide-mouth pint box. Place  
a small piece of crumpled  
parchment paper on top of  
berries. Press berries down in-  
to juice.

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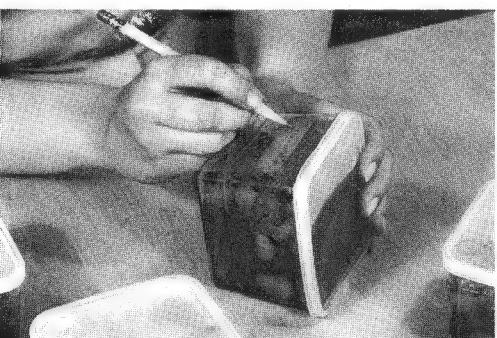
● Press lid on firmly to seal.  
Be sure the seal is watertight.

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● Label package with name of  
fruit and date frozen. Freeze;  
then store at 0° F. or below.

BN23632



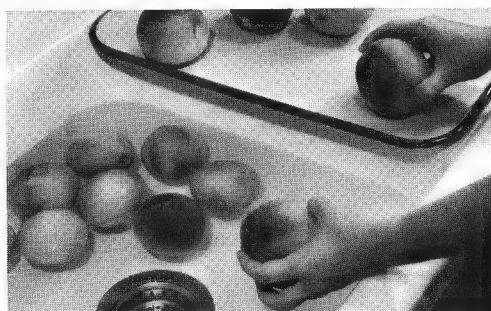
## Peaches . . . packed in sirup

Peaches packed in either sirup or sugar make an excellent frozen product. Sliced peaches are shown being packed in sirup. A pint glass freezer jar is used here, but other sizes and types of containers (p. 4) are suitable.

Follow these general directions for packing other fruits in sirup. Vary the sirup as called for in the directions for each fruit.

Make up sirup ahead of time so it will be ready and cold when you need it. Peaches are best packed in a 40-percent sirup—3 cups of sugar to 4 cups of water. This amount makes about  $5\frac{1}{2}$  cups of sirup. You need about  $\frac{3}{8}$  cup of sirup for each pint container of peaches. For details of sirup making, see page 10.

For frozen peaches with better color and flavor, add ascorbic acid to the cold sirup as described on pages 11 and 12. For peaches, use  $\frac{1}{2}$  teaspoon crystalline ascorbic acid to each quart of sirup.



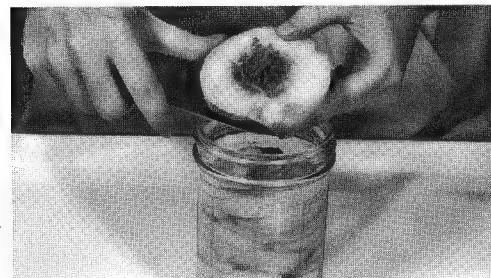
- Select mature peaches that are firm-ripe, with no green color in the skins. Allow 1 to  $1\frac{1}{2}$  pounds fresh peaches for each pint to be frozen. Wash them carefully and drain.

286A



- Pit peaches, and peel them by hand for the best-looking product. Peaches peel more quickly if they are dipped first in boiling water, then cold—but have ragged edges after thawing.

287A



- Pour about  $\frac{1}{2}$  cup cold sirup into each pint container. Slice peaches directly into container.

288A

- Add syrup to cover peaches. Leave  $\frac{1}{2}$ -inch head space at top of wide-mouth pint containers such as these, to allow for the expansion of the fruit during freezing.

289A



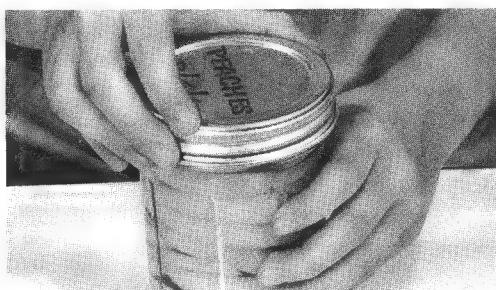
- Put a small piece of crumpled parchment paper on top of fruit to keep peaches down in the syrup. Syrup should always cover fruit to keep top pieces from changing color and flavor.

291A



- Wipe all sealing edges clean for a good seal. Screw lid on tight. Label with name of fruit and date of freezing.

292A



- Put sealed containers in the coldest part of freezer or locker. Leave a little space between containers so air can circulate freely. After fruit is frozen, store at  $0^{\circ}$  F. or below.

293A



## Directions for fruits

### Apples, slices

Sirup pack is preferred for apples to be used for fruit cocktail or uncooked dessert. Apples packed in sugar or frozen unsweetened are good for pie making. For better quality, apple slices need to be treated to prevent darkening.

Select full-flavored apples that are crisp and firm, not mealy in texture.<sup>1</sup> Wash, peel, and core. Slice medium apples into twelfths, large ones into sixteenths.

Pack in one of the following ways:

**Sirup pack.** Use 40-percent sirup (p. 10). For a better quality frozen product add  $\frac{1}{2}$  teaspoon crystalline ascorbic acid to each quart of sirup.

Slice apples directly into cold sirup in container, starting with  $\frac{1}{2}$  cup sirup to a pint container. Press fruit down in containers and add enough sirup to cover.

Leave head space (p. 7). Seal and freeze.

**Sugar pack.** To prevent darkening of apples during preparation, slice them into a solution of 2 tablespoons salt to a gallon of water. Hold in this solution no more than 15 to 20 minutes. Drain.

To retard darkening, place slices in a single layer in steamer; steam 1 $\frac{1}{2}$  to 2 minutes, depending on thickness of slice. Cool in cold water; drain.

Over each quart (1 $\frac{1}{4}$  pounds) of apple slices sprinkle evenly  $\frac{1}{2}$  cup sugar and stir.

Pack apples into containers and press fruit down, leaving head space (p. 7). Seal and freeze.

**Unsweetened pack.** Follow directions for sugar pack, omitting sugar.

### Applesauce

Select full-flavored apples. Wash apples, peel if desired, core, and slice. To each quart of apple slices add  $\frac{1}{8}$  cup water; cook until tender. Cool and strain if necessary. Sweeten to taste with  $\frac{1}{4}$  to  $\frac{3}{4}$  cup sugar for each quart (2 pounds) of sauce.

Pack into containers, leaving head space (p. 7). Seal and freeze.

### Apricots

**• Halves and slices.** The sirup pack is preferred for fruit to be served uncooked; the sugar pack for apricots to be used for pies or other cooked dishes.

Treatment to prevent darkening is necessary for a satisfactory product if apricots are packed in sugar. Such treatment also improves the quality of apricots packed in sirup.

Select firm, ripe, uniformly yellow apricots. Sort, wash, halve, and pit. Peel and slice if desired.

<sup>1</sup> To firm soft apples that are to be used in cooking or baking after freezing:

Hold sliced apples for 5 to 20 minutes in a solution made from 1 teaspoon calcium chloride (U.S.P. grade) or 2 tablespoons calcium lactate (U.S.P. grade) to each quart of water. The softer the apples the longer the time they should be held in the solution.

Apples differ with variety, stage of ripeness, and the region in which they are grown. Make a trial with a few packages. After freezing, boil apple slices a few minutes to test firmness.

If apricots are not peeled, heat them in boiling water  $\frac{1}{2}$  minute to keep skins from toughening during freezing. Then cool in cold water and drain.

Pack into containers in one of the following ways:

**Sirup pack.** Use 40-percent sirup (p. 10). For a better quality frozen product, add  $\frac{3}{4}$  teaspoon crystalline ascorbic acid to each quart of sirup.

Pack apricots directly into containers. Cover with sirup, leaving head space (p. 7). Seal and freeze.

**Sugar pack.** Before combining apricots with sugar give the fruit the following treatment to prevent darkening:

Dissolve  $\frac{1}{4}$  teaspoon crystalline ascorbic acid in  $\frac{1}{4}$  cup cold water and sprinkle over 1 quart ( $\frac{1}{8}$  pound) of fruit.

Mix  $\frac{1}{2}$  cup sugar with each quart of fruit. Stir until sugar is dissolved. Pack apricots into containers and press down until fruit is covered with juice, leaving head space (p. 7). Seal and freeze.

**Crushed or puree.** Select fully ripe fruit. For crushed apricots, dip in boiling water for  $\frac{1}{2}$  minute and cool in cold water. Peel the apricots. Pit and crush them coarsely.

For puree, pit and quarter the apricots. Press through a sieve; or heat to boiling point in just enough water to prevent scorching and then press through a sieve.

With each quart (2 pounds) of prepared apricots mix 1 cup sugar. For a better product, add  $\frac{1}{4}$  teaspoon

crystalline ascorbic acid dissolved in  $\frac{1}{4}$  cup of water to the fruit just before adding the sugar.

Pack into containers, leaving head space (p. 7). Seal and freeze.

## Avocados

**• Puree.** Avocados are best frozen as puree—unsweetened for salads and sandwiches, sweetened for ice cream and milk shakes. Avocados are not satisfactorily frozen whole or sliced.

Select avocados that are soft ripe—not hard or mushy—with rinds free from dark blemishes. Peel the fruit, cut in half, and remove the pit. Mash the pulp.

Pack in one of the following ways:

**Unsweetened pack.** For a better quality product add  $\frac{1}{8}$  teaspoon crystalline ascorbic acid to each quart of puree.

Pack into containers, leaving head space (p. 7). Seal and freeze.

**Sugar pack.** Mix 1 cup sugar with 1 quart (2 pounds) of puree. Pack into containers, leaving head space (p. 7). Seal and freeze.

## Blackberries, boysenberries, dewberries, loganberries, youngberries

**• Whole.** The sirup pack is preferred for berries to be served uncooked. The sugar pack or the unsweetened pack is satisfactory for berries to be used for cooked products such as pie or jam.

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## **Blackberries—continued**

Select firm, plump, fully ripe berries with glossy skins. Green berries may cause off-flavor.

Sort and remove any leaves and stems. Wash and drain.

Use one of the three following packs:

**Sirup pack.** Pack berries into containers and cover with cold 40- or 50-percent sirup (p. 10), depending on the sweetness of the fruit. Leave head space (p. 7). Seal and freeze.

**Sugar pack.** To 1 quart (1½ pounds) berries, add ¾ cup sugar. Turn berries over and over until most of the sugar is dissolved. Fill containers, leaving head space (p. 7). Seal and freeze.

**Unsweetened pack.** Pack berries into containers, leaving head space (p. 7). Seal and freeze.

**• Crushed or puree.** Prepare for packing in same way as for whole berries. Then crush. Or press through a sieve for puree.

To each quart (2 pounds) of crushed berries or puree add 1 cup sugar. Stir until sugar is dissolved. Pack into containers, leaving head space (p. 7). Seal and freeze.

If desired, steam for 1 minute and cool immediately. Preheating in steam tenderizes skin and makes a better flavored product.

Use one of the following packs:

**Sirup pack.** Pack berries into containers and cover with cold 40-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

**Unsweetened pack.** Pack berries into containers, leaving head space (p. 7). Seal and freeze.

**• Crushed or puree.** Select fully ripened berries. Sort, wash, and drain. Crush, or press berries through a fine sieve for puree.

To 1 quart (2 pounds) crushed berries or puree, add 1 to 1½ cups sugar, depending on tartness of fruit. Stir until sugar is dissolved. Pack into containers, leaving head space (p. 7). Seal and freeze.

## **Cherries, sour**

**• Whole.** Sirup pack is best for cherries to be served uncooked. Sugar pack is preferable for cherries to be used for pies or other cooked products. (Directions for packing sweet with sour cherries are on p. 21.)

Select bright-red, tree-ripened cherries. Stem, sort, and wash thoroughly. Drain and pit.

Use one of the following packs:

**Sirup pack.** Pack cherries into containers and cover with cold 60- or 65-percent sirup (p. 10), depending on tartness of the cherries. Leave head space (p. 7). Seal and freeze.

## **Blueberries, elderberries, huckleberries**

**• Whole.** The sirup pack is preferred for berries to be served uncooked. Berries frozen unsweetened are satisfactory for cooking.

Select full-flavored, ripe berries all about the same size, preferably with tender skins. Sort, wash, and drain.

**Sugar pack.** To 1 quart (1½ pounds) cherries add ¾ cup sugar. Mix until sugar is dissolved. Pack into containers, leaving head space (p. 7). Seal and freeze.

● **Crushed.** Prepare for packing as for whole sour cherries. Crush coarsely.

To 1 quart (2 pounds) fruit add 1 to 1½ cups sugar, depending on sweetness desired. Mix thoroughly until sugar is dissolved. Pack into containers, leaving head space (p. 7). Seal and freeze.

● **Puree.** Select and prepare for packing same as for whole cherries. Then crush cherries, heat to boiling point, cool, and press through a sieve.

To 1 quart (2 pounds) fruit puree add ¾ cup sugar. Pack puree into containers, leaving head space (p. 7). Seal and freeze.

● **Juice.** Select and prepare as for whole sour cherries. Then crush cherries, heat slightly to start flow of juice, and strain juice through a jelly bag. Cool, let stand overnight, and pour off clear juice for freezing. Or juice may be packed as soon as it cools, then strained when it is thawed for serving.

Sweeten with 1½ to 2 cups sugar to each quart of juice or pack without added sugar. Pour into containers, leaving head space (p. 7). Seal and freeze.

## **Cherries, sweet**

● **Whole.** Sweet cherries should be prepared quickly to avoid color and flavor changes. Red varieties are best for freezing.

Select well-colored, tree-ripened fruit with a sweet flavor. Sort, stem, wash, and drain. Remove pits if desired; they tend to give an almond-like flavor to the fruit.

Pack cherries into containers. Cover with cold 40-percent sirup (p. 10) to which has been added ½ teaspoon crystalline ascorbic acid to the quart. Leave head space (p. 7). Seal and freeze.

**With sour cherries.** Use half sweet cherries, half sour. Pack as above using 50-percent sirup (p. 10). Ascorbic acid may be added, but is not essential as it is for sweet cherries alone.

● **Crushed.** Prepare cherries as for freezing whole. Remove pits and crush cherries coarsely.

To each quart (2 pounds) of crushed fruit add 1½ cups sugar and ¼ teaspoon crystalline ascorbic acid. Mix well. Pack into containers, leaving head space (p. 7). Seal and freeze.

● **Juice.** Frozen sweet cherry juice may lack flavor and tartness. For a tastier product, add some sour cherry juice—either before freezing or after thawing.

Select well-colored, tree-ripened fruit. Sort, stem, wash, and drain. Remove pits and crush.

For red cherries, heat slightly (to 165° F.) to start flow of juice. Do not boil. Extract juice in a jelly bag.

For white cherries, extract juice without heating. Then warm juice (to 165° F.) in a double boiler or over low heat.

(Continued on page 22)

## **Cherries, sweet—continued**

**Juice—continued.** For either red or white cherry juice, cool the juice, let stand overnight, and pour off clear juice for freezing. Or pack the juice as soon as it cools; then strain after thawing for serving.

Sweeten with 1 cup sugar to each quart of juice, or pack without adding sugar. Pour into container, leaving head space (p. 7). Seal and freeze.

## **Coconut, fresh**

Shred coconut meat or put it through a food chopper. Pack into containers and cover with the coconut milk. Leave head space (p. 7). Seal and freeze.

## **Cranberries**

**• Whole.** Choose firm, deep-red berries with glossy skins. Stem and sort. Wash and drain.

**Unsweetened pack.** Pack into containers without sugar. Leave head space (p. 7). Seal and freeze.

**Sirup pack.** Pack into containers. Cover with cold 50-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

**• Puree.** Prepare cranberries as for freezing whole. Add 2 cups water to each quart (1 pound) of berries. Cook until skins have popped. Press through a sieve.

Add sugar to taste, about 2 cups for each quart (2 pounds) of puree. Pack into containers, leaving head space (p. 7). Seal and freeze.

## **Currants**

**• Whole.** Select plump, fully ripe bright-red currants. Wash in cold water and remove stems.

Pack in any of the following ways:

**Unsweetened pack.** Pack into containers, leaving head space (p. 7). Seal and freeze.

**Sirup pack.** Pack into containers and cover currants with cold 50-percent sirup (p. 10), leaving head space (p. 7). Seal and freeze.

**Sugar pack.** To each quart (1½ pounds) of fruit add ¾ cup sugar. Stir until most of the sugar is dissolved. Pack currants into containers, leaving head space (p. 7). Seal and freeze.

**• Crushed.** Prepare as directed for whole currants. Crush.

To 1 quart (2 pounds) crushed currants add 1⅓ cups sugar. Mix until sugar is dissolved. Pack into containers, leaving head space (p. 7). Seal and freeze.

**• Juice.** For use in beverages, select as directed for whole currants. For use in jelly making, mix slightly underripe and ripe fruit. Wash in cold water and remove stems. Crush currants and warm (to 165° F.) over low heat to start flow of juice. Do not boil. Press hot fruit in jelly bag to extract juice. Cool.

Sweeten with ¾ to 1 cup sugar to each quart of juice, or pack without adding sugar. Pour into containers, leaving head space (p. 7). Seal and freeze.

## Dates

Select dates with good flavor and tender texture. Wash and slit to remove pits. Leave whole, or press through a sieve for puree.

Pack into containers, leaving head space (p. 7). Seal and freeze.

## Figs

• **Whole or sliced.** Select tree-ripened soft-ripe fruit. Make sure figs have not become sour in the center. Sort, wash, and cut off stems. Peel if desired. Slice or leave whole.

Use one of the following packs:

**Sirup pack.** Use 35-percent sirup (p. 10). For a better product add  $\frac{3}{4}$  teaspoon crystalline ascorbic acid or  $\frac{1}{2}$  cup lemon juice to each quart of sirup. Pack figs into containers and cover with cold sirup, leaving head space (p. 7). Seal and freeze.

**Unsweetened pack.** Pack into containers, leaving head space (p. 7). Cover with water or not as desired. If water is used, crystalline ascorbic acid may be added to retard darkening of light-colored figs— $\frac{3}{4}$  teaspoon to each quart of water. Leave head space (p. 7). Seal and freeze.

• **Crushed.** Prepare figs as directed for freezing whole or sliced. Crush them coarsely.

With 1 quart ( $1\frac{1}{2}$  pounds) fruit, mix  $\frac{2}{3}$  cup sugar. For a product of better quality add  $\frac{1}{4}$  teaspoon crystalline ascorbic acid to each quart of fruit. Pack figs into containers, leaving head space (p. 7). Seal and freeze.

## Fruit cocktail

Use any combination of fruits desired . . . sliced or cubed peaches or apricots, melon balls, orange or grapefruit sections, whole seedless grapes, Bing cherries, or pineapple wedges.

Pack into containers; cover with cold 30- or 40-percent sirup (p. 10), depending on fruits used. Leave head space (p. 7). Seal and freeze.

## Gooseberries

Whole gooseberries may be frozen with sirup or without sweetening. For use in pie or preserves, the unsweetened pack is better.

Choose fully ripe berries if freezing for pie—berries a little underripe for jelly making. Sort, remove stems and blossom ends, and wash.

**Unsweetened pack.** Pack into containers without sugar. Leave head space (p. 7). Seal and freeze.

**Sirup pack.** Pack into containers. Cover with 50-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

## Grapefruit, oranges

• **Sections or slices.** Select firm tree-ripened fruit heavy for its size and free from soft spots. Wash and peel. Divide fruit into sections, removing all membranes and seeds. Slice oranges if desired. For grapefruit with many seeds, cut fruit in half, remove seeds; cut or scoop out sections.

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## Grapefruit—continued

### Sections or slices—continued.

Pack fruit into containers. Cover with cold 40-percent sirup (p. 10) made with excess fruit juice and water if needed. For better quality, add  $\frac{1}{2}$  teaspoon crystalline ascorbic acid to a quart of sirup. Leave head space (p. 7). Seal and freeze.

- **Juice.** Select fruit as directed for sections. Squeeze juice from fruit, using squeezer that does not press oil from rind.

Sweeten with 2 tablespoons sugar for each quart of juice, or pack without sugar. For better quality, add  $\frac{3}{4}$  teaspoon crystalline ascorbic acid for each gallon of juice. Pour juice into containers immediately. To avoid development of off-flavors, pack juice in glass jars or citrus-enamel tin cans, if available. Leave head space (p. 7). Seal and freeze.

## Grapes

- **Whole or halves.** Grapes are best frozen with sirup, but grapes to be used for juice or jelly can be frozen without sweetening.

Select firm-ripe grapes with tender skins and full color and flavor. Wash and stem. Leave seedless grapes whole; cut table grapes with seeds in half and remove seeds.

**Unsweetened pack.** Pack into containers without sweetening. Leave head space (p. 7). Seal and freeze.

**Sirup pack.** Pack into containers and cover with cold 40-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

● **Puree.** Grapes may be frozen as puree with sugar added. The puree may develop a gritty texture because of tartrate crystals. The crystals disappear when puree is heated.

Wash, stem, and crush the grapes. Heat to boiling. Drain off free juice and freeze or can it separately. Cool the crushed grapes and press them through a sieve.

To 1 quart (2 pounds) puree add  $\frac{1}{2}$  cup sugar. Pack into containers, leaving head space (p. 7). Seal and freeze.

- **Juice.** For beverages, select as for whole grapes. For jelly making, select as recommended in specific jelly recipe.

Wash, stem, and crush grapes. Strain them through a jelly bag. Let juice stand overnight in refrigerator or other cool place while sediment sinks to bottom. Pour off clear juice for freezing.

Pour juice into containers, leaving head space (p. 7). Seal and freeze.

If tartrate crystals form in frozen juice, they may be removed by straining the juice after it thaws.

## Melons—cantaloup, crenshaw, honeydew, Persian, watermelon

- **Slices, cubes, or balls.** Select firm-fleshed, well-colored, ripe melons. Cut in half, remove seeds, and peel. Cut melons into slices, cubes, or balls. Pack into containers and cover with cold 30-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

**• Crushed.** Prepare melons, except watermelon, as for freezing in slices, cubes, or balls. Then crush them. If a food chopper is used for crushing, use the coarse knife.

Add 1 tablespoon sugar to each quart of crushed fruit if desired. Stir until sugar is dissolved. Pack melon into containers, leaving head space (p. 7). Seal and freeze.

## Nectarines

**• Halves, quarters, or slices.** Choose fully ripe, well-colored, firm nectarines. Overripe fruit may take on a disagreeable flavor in frozen storage.

Sort, wash, and pit the fruit. Peel if desired. Cut in halves, quarters, or slices.

Cut fruit directly into cold 40-percent sirup (p. 10), starting with  $\frac{1}{2}$  cup for each pint container. For a better product add  $\frac{1}{2}$  teaspoon crystalline ascorbic acid to each quart of sirup. Press fruit down and add sirup to cover, leaving head space (p. 7). Seal and freeze.

**• Puree.** Prepare same as peach puree (see below).

## Peaches

**• Halves and slices.** Peaches in halves and slices have better quality when packed in sirup or with sugar, but a water pack will serve if sweetening is not desired.

Select firm, ripe peaches with no green color in the skins.

Sort, wash, pit, and peel. For a better product, peel peaches without a boiling-water dip. Slice if desired.

**Sirup pack.** Use 40-percent sirup (p. 10). For a better quality product, add  $\frac{1}{2}$  teaspoon crystalline ascorbic acid for each quart of sirup.

Put peaches directly into cold sirup in container—starting with  $\frac{1}{2}$  cup sirup to a pint container. Press fruit down and add sirup to cover, leaving head space (p. 7). Seal and freeze.

**Sugar pack.** To each quart ( $1\frac{1}{3}$  pounds) of prepared fruit add  $\frac{2}{3}$  cup sugar and mix well. To retard darkening, sprinkle ascorbic acid dissolved in water over the peaches before adding sugar. Use  $\frac{1}{4}$  teaspoon crystalline ascorbic acid in  $\frac{1}{4}$  cup cold water to each quart of fruit.

Pack into containers, leaving head space (p. 7). Seal and freeze.

**Water pack.** Pack peaches into containers and cover with cold water containing 1 teaspoon crystalline ascorbic acid to each quart of water. Leave head space (p. 7). Seal and freeze.

**• Crushed or puree.** To loosen skins, dip peaches in boiling water  $\frac{1}{2}$  to 1 minute. The riper the fruit the less scalding needed. Cool in cold water, remove skins, and pit.

Crush peaches coarsely. Or, for puree, press through a sieve, or heat pitted peaches 4 minutes in just enough water to prevent scorching and then press through a sieve.

With each quart (2 pounds) of crushed or pureed peaches mix 1 cup sugar. For better quality, add  $\frac{1}{8}$  teaspoon crystalline ascorbic acid to each quart of fruit.

Pack into containers, leaving head space (p. 7). Seal and freeze.

## Pears

• **Halves or quarters.** Select pears that are well ripened and firm but not hard. Wash fruit in cold water. Peel, cut in halves or quarters, and remove cores.

Heat pears in boiling 40-percent sirup (p. 10) for 1 to 2 minutes, depending on size of pieces. Drain and cool.

Pack pears into containers and cover with cold 40-percent sirup (p. 10). For a better product, add  $\frac{3}{4}$  teaspoon crystalline ascorbic acid to a quart of cold sirup. Leave head space (p. 7). Seal and freeze.

• **Puree.** Select well-ripened pears, firm but not hard or gritty. Peel or not as desired, but do not dip in boiling water to remove skins. Prepare and pack as for peach puree (see directions on p. 25).

**Sugar pack.** Mix 1 cup sugar with 1 quart (2 pounds) puree and pack into containers. Leave head space (p. 7). Seal and freeze.

## Pineapple

Select firm, ripe pineapple with full flavor and aroma. Pare and remove core and eyes. Slice, dice, crush, or cut the pineapple into wedges or sticks.

**Unsweetened pack.** Pack fruit tightly into containers without sugar. Leave head space (p. 7). Seal and freeze.

**Sirup pack.** Pack fruit tightly into containers. Cover with 30-percent sirup made with pineapple juice, if available, or with water (p. 10). Leave head space (p. 7). Seal and freeze.

## Persimmons

• **Puree (cultivated and native varieties).** Select orange-colored, soft-ripe persimmons. Sort, wash, peel, and cut into sections. Press the fruit through a sieve.

To each quart of persimmon puree add  $\frac{1}{8}$  teaspoon crystalline ascorbic acid or  $1\frac{1}{2}$  teaspoons crystalline citric acid to help prevent darkening and flavor loss.

Persimmon puree made from native varieties needs no sugar. Puree made from cultivated varieties may be packed with or without sugar.

**Unsweetened pack.** Pack unsweetened puree into containers. Leave head space (p. 7). Seal and freeze.

## Plums and prunes

• **Whole, halves, or quarters.** Frozen plums and prunes are very good for use in pies and jams, or in salads and desserts. The unsweetened pack is preferred for plums to be used for jams.

Choose firm tree-ripened fruit of deep color. Sort and wash. Leave whole or cut in halves or quarters. Pack in one of the following ways:

**Unsweetened pack.** Pack whole fruit into containers, leaving head space (p. 7). Seal and freeze.

To serve uncooked, dip frozen fruit in cold water for 5 to 10 seconds, remove skins, and cover with 40-percent sirup to thaw.

**Sirup pack.** Pack cut fruit into containers. Cover fruit with cold 40- or 50-percent sirup, depending on tartness of fruit (p. 10). For improved quality, add  $\frac{1}{2}$  teaspoon crystalline ascorbic acid to a quart of sirup. Leave head space (p. 7). Seal and freeze.

**• Puree.** Select fully ripe fruit. Wash, cut in halves, and remove pits. Puree may be prepared from unheated or heated fruit, depending on softness of fruit.

To prepare puree from unheated fruit, press raw fruit through a sieve. For better quality, add either  $\frac{1}{4}$  teaspoon crystalline ascorbic acid or  $\frac{1}{2}$  tablespoon crystalline citric acid to each quart (2 pounds) of puree.

To prepare puree from heated fruit, add 1 cup water for each 4 quarts (4 pounds) of fruit. Bring to a boil, cook 2 minutes, cool, and press through a sieve.

With each quart (2 pounds) of puree, mix  $\frac{1}{2}$  to 1 cup sugar, depending on tartness of fruit. Pack into containers, leaving head space (p. 7). Seal and freeze.

**• Juice.** For juice to be served in beverages, select plums as for puree. For juice to be used for jelly making, select as recommended in specific jelly recipe. Wash plums, then simmer until soft in enough water to barely cover. Strain through a jelly bag. Cool.

If desired, sweeten with 1 to 2 cups sugar for each quart of juice, depending on tartness of fruit. Pour into containers, leaving head space (p. 7). Seal and freeze.

## Raspberries

**• Whole.** Raspberries may be frozen in sugar or sirup or unsweetened. Seedy berries are best for use in making purees or juice.

Select fully ripe, juicy berries. Sort, wash carefully in cold water, and drain thoroughly.

**Sugar pack.** To 1 quart (1½ pounds) berries add  $\frac{3}{4}$  cup sugar and mix carefully to avoid crushing. Put into containers, leaving head space (p. 7). Seal and freeze.

**Sirup pack.** Put berries into containers and cover with cold 40-percent sirup (p. 10), leaving head space (p. 7). Seal and freeze.

**Unsweetened pack.** Put berries into containers, leaving head space (p. 7). Seal and freeze.

**• Crushed or puree.** Prepare as for whole raspberries; then crush or press through a sieve for puree.

To 1 quart (2 pounds) crushed berries or puree add  $\frac{3}{4}$  to 1 cup sugar, depending on sweetness of fruit. Mix until sugar is dissolved. Put into containers, leaving head space (p. 7). Seal and freeze.

**• Juice.** For beverage use, select as for whole raspberries. For jelly making, select as recommended in specific jelly recipe. Crush and heat berries slightly to start flow of juice. Strain in a jelly bag to extract juice.

Sweeten with  $\frac{1}{2}$  to 1 cup sugar for each quart of juice if desired. Pour into containers, leaving head space (p. 7). Seal and freeze.

## Rhubarb

• **Stalks or pieces.** Choose firm, tender, well-colored stalks with good flavor and few fibers. Wash, trim, and cut into 1- or 2-inch pieces or in lengths to fit the package. Heating rhubarb in boiling water for 1 minute and cooling promptly in cold water helps retain color and flavor.

**Unsweetened pack.** Pack either raw or preheated rhubarb tightly into containers without sugar. Leave head space (p. 7). Seal and freeze.

**Sirup pack.** Pack either raw or preheated rhubarb tightly into containers, cover with cold 40-percent sirup (p. 10). Leave head space (p. 7). Seal and freeze.

• **Puree.** Prepare rhubarb as for rhubarb stalks or pieces. Add 1 cup water to  $1\frac{1}{2}$  quarts (2 pounds) rhubarb and boil 2 minutes. Cool and press through a sieve. With 1 quart (2 pounds) puree mix  $\frac{2}{3}$  cup sugar. Pack into containers, leaving head space (p. 7). Seal and freeze.

• **Juice.** Select as for rhubarb stalks or pieces. Wash, trim, and cut into pieces 4 to 6 inches long. Add 1 quart water to 4 quarts (5 pounds) rhubarb and bring just to a boil. Press hot fruit in jelly bag to extract juice. Cool. Sweeten, if desired, using  $\frac{1}{2}$  cup sugar to a quart of juice. Pour into containers, leaving head space (p. 7). Seal and freeze.

## Strawberries

• **Whole.** Choose firm, ripe, red berries preferably with a slightly tart flavor. Large berries are better sliced or crushed. Sort berries, wash them

in cold water, drain well, and remove hulls.

Sugar and sirup packs make better quality frozen strawberries than berries packed without sweetening.

**Sirup pack.** Put berries into containers and cover with cold 50-percent sirup (p. 10), leaving head space (p. 7). Seal and freeze.

**Sugar pack.** Add  $\frac{3}{4}$  cup sugar to 1 quart ( $1\frac{1}{3}$  pounds) strawberries and mix thoroughly. Put into containers, leaving head space (p. 7). Seal and freeze.

**Unsweetened pack.** Pack into containers, leaving head space (p. 7). For better color, cover with water containing 1 teaspoon crystalline ascorbic acid to each quart of water. Seal and freeze.

• **Sliced or crushed.** Prepare for packing as for whole strawberries; then slice, or crush partially or completely.

To 1 quart ( $1\frac{1}{2}$  pounds) berries add  $\frac{3}{4}$  cup sugar; mix thoroughly. Pack into containers, leaving head space (p. 7). Seal and freeze.

• **Puree.** Prepare strawberries as for freezing whole. Then press berries through a sieve. To 1 quart (2 pounds) puree add  $\frac{2}{3}$  cup sugar and mix well. Put into containers, leaving head space (p. 7). Seal and freeze.

• **Juice.** Choose fully ripe berries. Sort and wash them in cold water. Drain well and remove hulls. Crush berries and strain juice through a jelly bag. Sweeten with  $\frac{2}{3}$  to 1 cup sugar to each quart of juice, or leave unsweetened. Pour into containers, leaving head space (p. 7). Seal and freeze.

## **Points on freezing vegetables**

Best for freezing are fresh, tender vegetables right from the garden. The fresher the vegetables when frozen the more satisfactory will be your product.

### **First steps**

Washing is the first step in the preparation of most vegetables for freezing. However, lima beans, green peas, and other vegetables that are protected by pods may not need to be washed.

Wash vegetables thoroughly in cold water. Lift them out of the water as grit settles to the bottom of the pan.

Sort vegetables according to size for heating and packing unless they are to be cut into pieces of uniform size.

Peel, trim, and cut into pieces, as directed for each vegetable on pages 36 to 41.

### **Heating before packing**

An important step in preparing vegetables for freezing is heating or "blanching" before packing. Practically every vegetable, except green pepper, maintains better quality in frozen storage if heated before packing.

The reason for heating vegetables before freezing is that it slows or stops the action of enzymes. Up until the time vegetables are ready to pick, enzymes help them grow and mature. After that they cause loss of flavor and color. If vegetables are not heated enough the enzymes continue to be active during frozen storage. Then the vegetables may develop off-flavors, discolor, or toughen so that they may be unappetizing in a few weeks.

Heating also wilts or softens vegetables and makes them easier to pack. Heating time varies with the vegetable and size of pieces.

**To heat in boiling water.** For home freezing, the most satisfactory way to heat practically all vegetables is in boiling water. Use a blancher, which has a blanching basket and cover. Or fit a wire basket into a large kettle, and add the cover.

For each pound of prepared vegetable use at least 1 gallon of boiling water in the blancher or kettle. Put vegetables in blanching basket or wire basket and lower into the boiling water. A wire cover for the basket can be used to keep the vegetables down in the boiling water.

Put lid on blancher or kettle and start counting time immediately. Keep heat high for time given in directions for vegetable you are freezing. Heat 1 minute longer than the time specified if you live 5,000 feet or more above sea level.

**To heat in steam.** In this publication, heating in steam is recommended for a few vegetables. For broccoli, pumpkin, sweetpotatoes, and winter squash both steaming and boiling are satisfactory methods.

To steam, use a kettle with a tight lid and a rack that holds a steaming basket at least 3 inches above the bottom of the kettle. Put an inch or two of water in the kettle and bring the water to a boil.

Put vegetables in the basket in a single layer so that steam reaches all parts quickly. Cover the kettle and keep heat high. Start counting steaming time as soon as the lid is on. Steam 1 minute longer than the time specified in directions if you live 5,000 feet or more above sea level.

**Other ways to heat.** Pumpkin, sweetpotatoes, and winter squash may be heated in a pressure cooker or in the oven before freezing. Mushrooms may be heated in fat in a fry pan. Tomatoes for juice may be simmered.

## Cooling

After vegetables are heated they should be cooled quickly and thoroughly to stop the cooking.

To cool vegetables heated in boiling water or steam, plunge the basket of vegetables immediately into a large quantity of cold water—60° F. or below. Change water frequently or use cold running water or iced water. If ice is used, you'll need about 1 pound of ice for each pound of vegetable. It will take about as long to cool the food as it does to heat it. When the vegetable is cool, remove it from the water and drain thoroughly.

To cool vegetables heated in the oven, a pressure cooker, or a fry pan—set pan of food in water and change water to speed cooling.

## Dry pack more practical

Either dry or brine pack may be used for most vegetables to be frozen. However, in this publication the dry pack is recommended for all vegetables, because preparation for freezing and serving is easier.

## Table of vegetable yields

The table on page 31 will help you figure the amount of frozen food you can get from a given amount of a fresh vegetable. The number of pints of frozen vegetables you get depends on the quality, condition, maturity, and variety—and on the way the vegetable is trimmed and cut.

## Approximate yield of frozen vegetables from fresh

VEGETABLE	FRESH, AS PURCHASED OR PICKED	FROZEN
Asparagus	1 crate (12 2-lb. bunches) 1 to 1½ lb.	15 to 22 pt. 1 pt.
Beans, lima (in pods)	1 bu. (32 lb.) 2 to 2½ lb.	12 to 16 pt. 1 pt.
Beans, snap, green, and wax	1 bu. (30 lb.) ⅔ to 1 lb.	30 to 45 pt. 1 pt.
Beet greens	15 lb. 1 to 1½ lb.	10 to 15 pt. 1 pt.
Beets (without tops)	1 bu. (52 lb.) 1¼ to 1½ lb.	35 to 42 pt. 1 pt.
Broccoli	1 crate (25 lb.) 1 lb.	24 pt. 1 pt.
Brussels sprouts	4 quart boxes 1 lb.	6 pt. 1 pt.
Carrots (without tops)	1 bu. (50 lb.) 1¼ to 1½ lb.	32 to 40 pt. 1 pt.
Cauliflower	2 medium heads 1⅓ lb.	3 pt. 1 pt.
Chard	1 bu. (12 lb.) 1 to 1½ lb.	8 to 12 pt. 1 pt.
Collards	1 bu. (12 lb.) 1 to 1½ lb.	8 to 12 pt. 1 pt.
Corn, sweet (in husks)	1 bu. (35 lb.) 2 to 2½ lb.	14 to 17 pt. 1 pt.
Kale	1 bu. (18 lb.) 1 to 1½ lb.	12 to 18 pt. 1 pt.
Mustard greens	1 bu. (12 lb.) 1 to 1½ lb.	8 to 12 pt. 1 pt.
Peas	1 bu. (30 lb.) 2 to 2½ lb.	12 to 15 pt. 1 pt.
Peppers, sweet	⅔ lb. (3 peppers)	1 pt.
Pumpkin	3 lb.	2 pt.
Spinach	1 bu. (18 lb.) 1 to 1½ lb.	12 to 18 pt. 1 pt.
Squash, summer	1 bu. (40 lb.) 1 to 1¼ lb.	32 to 40 pt. 1 pt.
Squash, winter	3 lb.	2 pt.
Sweetpotatoes	⅔ lb.	1 pt.

## Freezing snap beans

Other vegetables may be frozen in much the same way as snap beans. Beans are heated in boiling water before they are frozen—the most satisfactory home method for nearly all vegetables.



- Select young, tender, stringless beans that snap when broken. Allow  $\frac{2}{3}$  to 1 pound of fresh beans for 1 pint frozen. Wash thoroughly.

278A



- Cut beans into 1- or 2-inch pieces or slice them lengthwise.

280A



- Put beans in blanching basket, lower basket into boiling water, and cover. Heat for 3 minutes. Keep heat high under the water.

281A

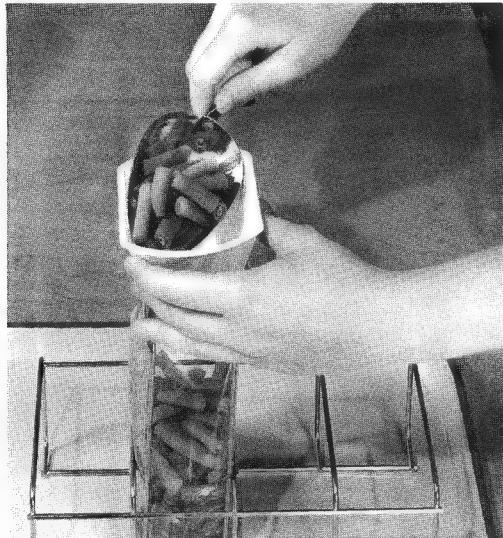
- Plunge basket of heated beans into cold water to stop the cooking. It takes about as long to cool vegetables as to heat them. When beans are cool, remove them from water and drain.

282A



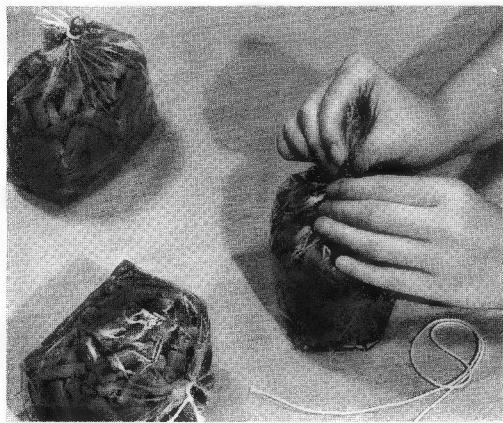
- Pack the beans into bags or other containers. A stand to hold the bags makes filling easier. A funnel helps keep the sealing edges clean.

283A



- Leave  $\frac{1}{2}$ -inch head space and seal by twisting and folding back top of bag and tying with a string. Freeze beans at once. Store at  $0^{\circ}\text{ F.}$  or below. If the bags used are of materials that become brittle at low temperatures, they need an outside carton for protection.

284A



## Freezing broccoli

Broccoli, like all vegetables, is best frozen as soon as possible after it is picked. Allow about 1 pound fresh broccoli for each pint frozen. Because broccoli packs loosely, no head space need be allowed. Containers other than those shown here also may be used for packing.



- Select tight, compact, dark-green heads with tender stalks free from woodiness. Trim off large leaves and tough parts of stems and wash thoroughly.

If necessary, soak stalks for  $\frac{1}{2}$  hour in salt water (made of 4 teaspoons salt to each gallon of water) to remove insects.

BN23605



- Cut broccoli lengthwise into uniform pieces, leaving heads about  $1\frac{1}{2}$  inches across—to insure uniform heating and make attractive pieces for serving.

BN23603



- Steam pieces by placing them in blanching basket over rapidly boiling water. Cover kettle, keep heat high, and steam for 5 minutes. Or heat pieces in boiling water 3 minutes, as is shown for snap beans (p. 32).

BN23602

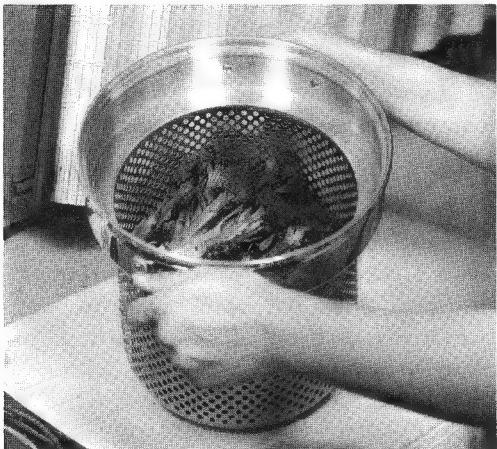
- Remove basket from boiling water. Cool broccoli by plunging basket into cold water.

BN23607



- Lift basket from cold water as soon as broccoli is cool and let drain a few minutes.

BN23606



- Pack broccoli so some heads are at each end of the container—to get more broccoli in the package. No head space is needed. Press lid on firmly to seal. Freeze at once. Store at 0° F. or below.

BN23604



## Directions for vegetables

### Asparagus

Select young, tender stalks with compact tips. Sort according to thickness of stalk.

Wash asparagus thoroughly and cut or break off and discard tough parts of stalks. Leave spears in lengths to fit the package or cut in 2-inch lengths.

Heat stalks in boiling water according to thickness of stalk:

Small stalks.....	2 minutes
Medium stalks.....	3 minutes
Large stalks.....	4 minutes

Cool promptly in cold water and drain.

Pack into containers, leaving no head space. When packing spears, alternate tips and stem ends. In containers that are wider at the top than bottom, pack asparagus with tips down. Seal and freeze.

### Beans, lima

Select well-filled pods. Beans should be green but not starchy or mealy. Shell and sort according to size, or leave beans in pods to be shelled after heating and cooling.  
Heat in boiling water:

Small beans or pods.....	2 minutes
Medium beans or pods....	3 minutes
Large beans or pods.....	4 minutes

Cool promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

### Beans, shell, green

Select pods that are plump, not dry or wrinkled. Shell the beans. Heat in boiling water 1 minute. Cool promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

### Beans, snap, green, or wax

Select young, tender, stringless beans that snap when broken. Wash thoroughly; then remove ends.

Cut in 1- or 2-inch pieces, or slice lengthwise into strips for frenched (julienne-style) snap beans.

Heat in boiling water for 3 minutes. Chill promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

### Beans, soybeans, green

Select firm, well-filled, bright-green pods. Wash. Heat beans in pods 5 minutes in boiling water, and cool promptly in cold water. Squeeze soybeans out of pods.

Pack soybeans into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

### Beets

Select young or mature beets not more than 3 inches across.

Wash and sort according to size. Trim tops, leaving  $\frac{1}{2}$  inch of stems.

Cook in boiling water until tender—for small beets, 25 to 30 min-

utes; for medium-size beets, 45 to 50 minutes. Cool promptly in cold water. Peel and cut into slices or cubes.

Pack beets into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## **Broccoli**

Select tight, compact, dark-green heads with tender stalks free from woodiness. Wash, peel stalks, and trim. If necessary to remove insects, soak for  $\frac{1}{2}$  hour in a solution made of 4 teaspoons salt to 1 gallon cold water. Split lengthwise into pieces so that flowerets are not more than  $1\frac{1}{2}$  inches across.

Heat in steam 5 minutes or in boiling water 3 minutes. Cool promptly in cold water and drain.

Pack broccoli into containers, leaving no head space. Seal and freeze.

## **Brussels sprouts**

Select green, firm, and compact heads. Examine heads carefully to make sure they are free from insects. Trim, removing coarse outer leaves. Wash thoroughly. Sort into small, medium, and large sizes.

Heat in boiling water:

Small heads . . . . .	3 minutes
Medium heads . . . . .	4 minutes
Large heads . . . . .	5 minutes

Cool promptly in cold water and drain.

Pack brussels sprouts into containers, leaving no head space. Seal and freeze.

## **Cabbage or chinese cabbage**

Frozen cabbage or chinese cabbage is suitable for use only as a cooked vegetable.

Select freshly picked, solid heads. Trim coarse outer leaves from head. Cut into medium to coarse shreds or thin wedges, or separate head into leaves. Heat in boiling water  $1\frac{1}{2}$  minutes.

Cool promptly in cold water and drain.

Pack cabbage into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## **Carrots**

Select tender, mild-flavored carrots. Remove tops, wash, and peel. Leave small carrots whole. Cut others into  $\frac{1}{4}$ -inch cubes, thin slices, or lengthwise strips.

Heat in boiling water:

Whole carrots, small . . . . .	5 minutes
Diced or sliced . . . . .	2 minutes
Lengthwise strips . . . . .	2 minutes

Cool promptly in cold water and drain.

Pack carrots into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## **Cauliflower**

Choose firm, tender, snow white heads. Break or cut into pieces about 1 inch across. Wash well. If necessary to remove insects, soak for 30 minutes in a solution of salt and water—4 teaspoons salt to each gallon of water. Drain.

(Continued on page 38)

## **Cauliflower—continued**

Heat in boiling water containing 4 teaspoons salt to a gallon for 3 minutes. Cool promptly in cold water and drain.

Pack cauliflower into containers, leaving no head space. Seal and freeze.

## **Celery**

Select crisp, tender stalks, free from coarse strings and pithiness.

Wash thoroughly, trim, and cut stalks into 1-inch lengths.

Heat for 3 minutes in boiling water. Cool promptly in cold water and drain.

Pack celery into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## **Corn, sweet**

### **• Whole-kernel and cream-style.**

Select ears with plump, tender kernels and thin, sweet milk. If the milk is thick and starchy it is better to freeze corn as cream-style.

Husk ears, remove silk, and wash the corn. Heat ears in boiling water for 4 minutes. Cool promptly in cold water and drain.

For whole-kernel corn, cut kernels from cob at about two-thirds the depth of the kernels.

For cream-style corn, cut corn from the cob at about the center of the kernels. Scrape the cobs with the back of the knife to remove the juice and the heart of the kernel.

Pack corn into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

• **On-the-cob.** Select same as for whole-kernel sweet corn.

Husk, remove silk, wash, and sort ears according to size.

Heat in boiling water:

Small ears..... 7 minutes  
( $1\frac{1}{4}$  inches or less in diameter)

Medium ears..... 9 minutes  
( $1\frac{1}{4}$  to  $1\frac{1}{2}$  inches in diameter)

Large ears..... 11 minutes  
(over  $1\frac{1}{2}$  inches in diameter)

Cool promptly in cold water and drain.

Pack ears into containers or wrap in moisture-vapor-resistant material. Seal and freeze.

## **Greens—beet greens, chard, collards, kale, mustard greens, spinach, turnip greens**

Select young, tender leaves. Wash well. Remove tough stems and imperfect leaves. Cut leaves of chard into pieces as desired.

Heat in boiling water for the following periods:

Beet greens, kale, chard, 2 minutes  
mustard greens, tur-  
nip greens.

Collards..... 3 minutes

Spinach and New Zea- 2 minutes  
land spinach.

Very tender leaves....  $1\frac{1}{2}$  minutes

Cool promptly in cold water and drain.

Pack greens into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Kohlrabi

Select young, tender, mild-flavored kohlrabi, small to medium in size. Cut off tops and roots. Wash, peel, and leave whole or dice in  $\frac{1}{2}$ -inch cubes.

Heat in boiling water:

Whole kohlrabi..... 3 minutes  
Cubes..... 1 minute

Cool promptly in cold water and drain.

Pack whole kohlrabi into containers or wrap in moisture-vapor-resistant material. Seal and freeze.

Pack cubes into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Mushrooms

Choose mushrooms free from spots and decay. Sort according to size. Wash thoroughly in cold water. Trim off ends of stems. If mushrooms are larger than 1 inch across, slice them or cut them into quarters.

Mushrooms may be steamed or heated in fat in a fry pan.

**To steam.** Mushrooms to be steamed have better color if given antidarkening treatment first.

Dip for 5 minutes in a solution containing 1 teaspoon lemon juice or  $1\frac{1}{2}$  teaspoons citric acid to a pint of water. Then steam:

Whole mushrooms..... 5 minutes  
(not larger than 1 inch across)

Buttons or quarters....  $3\frac{1}{2}$  minutes  
Slices..... 3 minutes

Cool promptly in cold water and drain.

**To heat in fry pan.** Heat small quantities of mushrooms in table fat in an open fry pan until almost done.

Cool in air or set pan in which mushrooms were cooked in cold water.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Okra

Select young, tender, green pods. Wash thoroughly. Cut off stems in such a way as not to cut open seed cells.

Heat in boiling water:

Small pods..... 3 minutes  
Large pods..... 4 minutes

Cool promptly in cold water and drain.

Leave whole or slice crosswise.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Parsnips

Choose small to medium-size parsnips that are tender and free from woodiness. Remove tops, wash, peel, and cut in  $\frac{1}{2}$ -inch cubes or slices.

Heat in boiling water 2 minutes. Cool promptly in cold water; drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Peas, field (blackeye)

Select well-filled flexible pods with tender seeds. Shell peas, discarding those that are hard.

Heat in boiling water for 2 minutes. Cool promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## **Peas, green**

Choose bright-green, plump, firm pods with sweet, tender peas. Do not use immature or tough peas.

Shell peas. Heat in boiling water 1½ minutes. Cool promptly in cold water and drain.

Pack peas into containers, leaving ½-inch head space. Seal and freeze.

## **Peppers, sweet or hot**

• **Sweet.** Peppers frozen without heating are best for use in uncooked foods. Heated peppers are easier to pack and good for use in cooking.

Select firm, crisp, thick-walled peppers. Wash, cut out stems, cut in half, and remove seeds. If desired, cut into ½-inch strips or rings.

Heat in boiling water if desired:

Halves.....	3 minutes
Slices.....	2 minutes

Cool promptly in cold water and drain.

If peppers have not been heated, pack into containers, leaving no head space. Seal and freeze. If peppers have been heated, leave ½-inch head space.

• **Hot.** Wash and stem peppers. Pack into small containers, leaving no head space. Seal and freeze.

## **Pimientos**

Select firm, crisp, thick-walled pimientos.

To peel, first roast pimientos in an oven at 400° F. (hot oven) for 3 to 4 minutes. Remove charred skins by

rinsing pimientos in cold water. Drain.

Pack pimientos into containers leaving ½-inch head space. Seal and freeze.

## **Pumpkin**

Select full-colored, mature pumpkin with texture that is fine rather than coarse and stringy.

Wash, cut into quarters or smaller pieces, and remove seeds. Cook pumpkin pieces until soft in boiling water, in steam, in a pressure cooker, or in the oven.

Remove pulp from rind and mash it or press it through a sieve.

To cool, place pan containing pumpkin in cold water. Stir pumpkin occasionally.

Pack into containers, leaving ½-inch head space. Seal and freeze.

## **Rutabagas**

Select young, tender, medium-size rutabagas with no tough fibers. Cut off tops, wash, and peel.

• **Cubed.** Cut into ½-inch cubes. Heat in boiling water for 2 minutes. Cool promptly in cold water; drain. Pack into containers, leaving ½-inch head space. Seal and freeze.

• **Mashed.** Cut rutabagas in pieces. Cook until tender in boiling water and drain. Mash or press through a sieve.

To cool, place pan containing rutabagas in cold water. Stir rutabagas occasionally. Pack into containers, leaving ½-inch head space. Seal and freeze.

## Squash, summer or winter

● **Summer.** Select young squash with small seeds and tender rind. Wash, cut in  $\frac{1}{2}$ -inch slices. Heat in boiling water for 3 minutes. Cool squash promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

● **Winter.** Select firm, mature squash. Wash, cut into pieces, and remove seeds. Cook pieces until soft in boiling water, in steam, in a pressure cooker, or in the oven. Remove pulp from rind and mash or press through a sieve.

To cool, place pan containing squash in cold water and stir squash occasionally.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

## Sweetpotatoes

Sweetpotatoes may be packed whole, sliced, or mashed.

Choose medium to large mature sweetpotatoes that have been cured. Sort according to size, and wash.

Cook until almost tender in water, in steam, in a pressure cooker, or in the oven. Let stand at room temperature until cool. Peel sweetpotatoes; cut in halves, slice, or mash.

If desired, to prevent darkening, dip whole sweetpotatoes or slices for 5 seconds in a solution of 1 tablespoon citric acid or  $\frac{1}{2}$  cup lemon juice to 1 quart water.

To keep mashed sweetpotatoes from darkening, mix 2 tablespoons orange or lemon juice with each quart of mashed sweetpotatoes.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

● **For variety.** Roll cooked sweet-potato slices in sugar. Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

Or pack whole or sliced cooked sweetpotatoes in containers, cover with cold sirup (made of equal parts by measure of sugar and water). Leave head space (see p. 7, for liquid pack). Seal and freeze.

## Tomatoes

● **Juice.** Wash, sort, and trim firm, vine-ripened tomatoes. Cut in quarters or eighths. Simmer 5 to 10 minutes. Press through a sieve. If desired, season with 1 teaspoon salt to each quart of juice. Pour into containers, leaving head space (see p. 7, for juices). Seal and freeze.

● **Stewed.** Remove stem ends, peel, and quarter ripe tomatoes. Cover and cook until tender (10 to 20 minutes). Place pan containing tomatoes in cold water to cool. Pack into containers, leaving head space (see p. 7, for liquid pack). Seal and freeze.

## Turnips

Select small to medium, firm turnips that are tender and have a mild flavor. Wash, peel, and cut into  $\frac{1}{2}$ -inch cubes. Heat in boiling water for 2 minutes. Cool promptly in cold water and drain.

Pack into containers, leaving  $\frac{1}{2}$ -inch head space. Seal and freeze.

# How to use frozen fruits and vegetables

## Fruits

**Serving uncooked.** Frozen fruits need only to be thawed, if they are to be served raw.

For best color and flavor, leave fruit in the sealed container to thaw. Serve as soon as thawed; a few ice crystals in the fruit improve the texture for eating raw.

Frozen fruit in the package may be thawed in the refrigerator, at room temperature, or in a pan of cool water. Turn package several times for more even thawing.

Allow 6 to 8 hours on a refrigerator shelf for thawing a 1-pound package of fruit packed in sirup. Allow 2 to 4 hours for thawing a package of the same size at room temperature— $\frac{1}{2}$  to 1 hour for thawing in a pan of cool water.

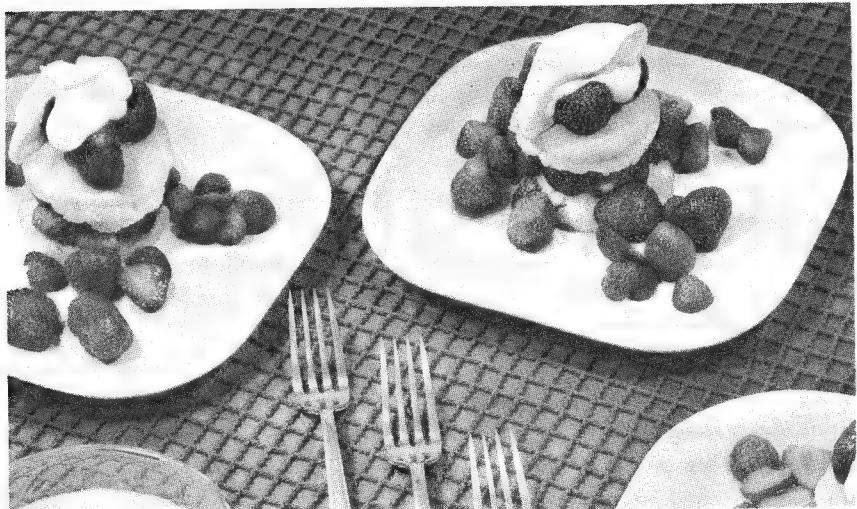
Fruit packed with dry sugar thaws slightly faster than that packed in sirup. Both sugar and sirup packs thaw faster than unsweetened packs.

Thaw only as much as you need at one time. If you have leftover thawed fruit it will keep better if you cook it. Cooked fruit will keep in the refrigerator for a few days.

**Cooking.** First thaw fruits until pieces can be loosened. Then cook as you would cook fresh fruit. If there is not enough juice to prevent scorching, add water as needed. If the recipe calls for sugar, allow for any sweetening that was added before freezing.

Frozen fruits often have more juice than called for in recipes for baked products using fresh fruits. In that case use only part of the juice, or add more thickening for the extra juice.

9125D



**Using crushed fruit and purees.** Serve crushed fruit as raw fruit—after it is partially or completely thawed. Or use it after thawing as a topping for ice cream or cakes, as a filling for sweet rolls, or for jam.

Use thawed purees in puddings, ice cream, sherbets, jams, pies, ripple cakes, fruit-filled coffee cake, and rolls.

**Serving juice.** Serve frozen fruit juice as a beverage—after it is thawed but while it is still cold. Some juices, such as sour cherry, plum, grape, and berry juices, may be diluted  $\frac{1}{3}$  to  $\frac{1}{2}$  with water or a bland juice.

## **Vegetables**

The secret of cooking frozen vegetables successfully is to cook the vegetable until just tender. That way you save vitamins, bright color, and fresh flavor.

Frozen vegetables may be cooked in a small amount of water or in a pressure saucepan, or by baking or panfrying.

**Cooking in a small amount of water.** You should cook most frozen vegetables without thawing them first. Leafy vegetables, such as spinach, cook more evenly if thawed just enough to separate the leaves before cooking. Corn-on-the-cob should be partially thawed before cooking, so that the cob will be heated through by the time the corn is cooked. Holding corn after thawing or cooking causes sogginess.

Bring water to a boil in a covered saucepan. The amount of water to use depends on the vegetable and the size of the package. For most vegetables one-half cup of water is enough for a pint package. The frost in the packages furnishes some additional moisture.

Put the frozen vegetable in the boiling water, cover the pan, and bring the water quickly back to a boil. To insure uniform cooking, it may be necessary to separate pieces carefully with a fork. When the water is boiling throughout the pan, reduce the heat and start counting time. Be sure pan is covered to keep in the steam, which aids in cooking. Cook gently until vegetables are just tender.

Add seasonings as desired and serve immediately.

The following timetable shows about how long it takes to cook tender one pint of various frozen vegetables—and how much water to use. Use the table only as a general guide. Cooking times vary among varieties and with the maturity of the vegetable when it is frozen.

The time required for cooking vegetables is slightly longer at high than at low altitudes because the temperature of boiling water decreases about  $2^{\circ}$  F. with each 1,000 feet above sea level.

## Timetable for cooking frozen vegetables in a small amount of water<sup>1</sup>

VEGETABLE	Time to allow after water returns to boil <sup>2</sup> Minutes	VEGETABLE	Time to allow after water returns to boil <sup>2</sup> Minutes
Asparagus.....	5-10	Chard.....	8-10
Beans, lima:		Corn:	
Large type.....	6-10	Whole-kernel.....	3-5
Baby type.....	15-20	On-the-cob.....	3-4
Beans, snap, green, or wax:		Kale.....	8-12
1-inch pieces.....	12-18	Kohlrabi.....	8-10
Julienne.....	5-10	Mustard greens.....	8-15
Beans, soybeans, green.....	10-20	Peas, green.....	5-10
Beet greens.....	6-12	Spinach.....	4-6
Broccoli.....	5-8	Squash, summer.....	10-12
Brussels sprouts.....	4-9	Turnip greens.....	15-20
Carrots.....	5-10	Turnips.....	8-12
Cauliflower.....	5-8		

<sup>1</sup> Use  $\frac{1}{2}$  cup of lightly salted water for each pint of vegetable with these exceptions:  
Lima beans, 1 cup; corn-on-the-cob, water to cover.

<sup>2</sup> Time required at sea level; slightly longer time is required at higher altitudes.

**Cooking in a pressure saucepan.** Follow directions and cooking times specified by the manufacturer of your saucepan.

**Baking.** Many frozen vegetables may be baked in a covered casserole. Partially defrost vegetable to separate pieces.

Put vegetable in a greased casserole; add seasonings as desired. Cover and bake until just tender.

The time it takes to bake a vegetable varies with size of pieces and how much you thaw them before baking.

Approximate time for baking most thawed vegetables is 45 minutes at 350° F. (moderate oven). Slightly more time may be required if other foods are being baked at the same time.

To bake corn-on-the-cob, partially thaw the ears first. Brush with melted butter or margarine, salt, and roast at 400° F. (hot oven) about 20 minutes.

**Pan frying.** Use a heavy fry pan with cover. Place about 1 tablespoon fat in pan. Add 1 pint frozen vegetable, which has been thawed enough to separate pieces. Cook covered over moderate heat. Stir occasionally. Cook until just tender. Season to taste, and serve immediately.

Peas, asparagus, and broccoli will cook tender in a fry pan in about 10 minutes. Mushrooms will be done in 10 to 15 minutes and snap beans in 15 to 20 minutes.

**Other ways to prepare frozen vegetables.** Vegetables that are cooked until tender before freezing need only to be seasoned and heated before serving. Cooked frozen vegetables can be used in many dishes in the same ways as cooked fresh vegetables. They may be creamed or scalloped, served au gratin, or added to souffles, cream soups, or salads.

Pumpkin, winter squash, and sweetpotatoes may be thawed and used as the main ingredient in pie fillings.

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## More information

When you preserve food at home, other publications of the Agricultural Research Service listed below may help you. They can be obtained by sending a post card to Office of Information, United States Department of Agriculture, Washington, D.C. 20250. Please include your name, address, zip code, and the bulletin title and number.

- Home canning of fruits and vegetables, G 8.
- Home canning of meat and poultry, G 106.
- How to make jellies, jams, and preserves at home, G 56.
- Making pickles and relishes at home, G 92.
- Home freezing of poultry, G 70.
- Freezing combination main dishes, G 40.
- Freezing meat and fish in the home, G 93.
- Home freezers—their selection and use, G 48.

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